ABSTRACT OF THE INVENTION

A specific clinical protocol for use toward therapy of defective, diseased and damaged neurons in the mammalian brain, of particular usefulness for treatment of neurodegenerative conditions such as Parkinson's disease and Alzheimer's disease. The protocol is practiced by delivering a definite concentration of recombinant neurotrophin, such as glial cell-derived neurotrophic factor), into a targeted region of the brain (such as the substantia nigra) using a lentiviral expression vector. The neurotrophin is delivered to, or within close proximity of, identified defective, diseased or damaged brain cells. The concentration of neurotrophin delivered as part of a neurotrophic composition varies from 10^{10} to 10^{15} neurotrophin encoding viral particles/ml of composition fluid. Each delivery site receives from 2.5 µl to 25 µl of neurotrophic composition, delivered slowly, as in over a period of time ranging upwards of 10 minutes/delivery site. Each delivery site is at, or within 500 µm of, a targeted cell, and no more than about 10 mm from another delivery site. The method stimulates growth of targeted neurons, and reversal of functional deficits associated with the neurodegenerative disease being treated.